

# Subsea Success for NASNet



Nautronix has completed the first field-wide deployment of NASNet by Subsea 7, in the Agbami field, offshore Nigeria. The field is operated by Star Deep Water Petroleum Limited (an affiliate of Chevron Corporation) on and is located approximately 70 kilometres offshore of the central area of the Niger Delta, Nigeria.

The system, comprising of 14 NASNet sleds and 22 Mobile Transceivers (MTRx), was delivered to Subsea 7 in early July 2007, and subsequently mobilised to Subsea 7's umbilical lay and construction vessel MV Toisa Perseus, for operations on the Agbami field situated 350Km southeast of the city of Lagos. Subsea operations ranged from water depths of 1,280 to 1,650 msw.

On this project, the underwater acoustic positioning system provided total coverage for an area of approximately 50km<sup>2</sup>; this is believed to be the first time anyone in the world has achieved such wide field coverage with so few transponders.

The workscope was completed between September and December 2007 during which positioning was provided for:

- Installation of 12 suction piles to accommodate manifolds
- Installation and testing of 12 manifolds:
  - 6 Production manifolds
  - 2 Gas Injection manifolds
  - 4 Water Injection manifolds
- Installation of 30 no. UTA foundation structures for umbilical ends
- Installation and testing of 15 infield umbilicals (total 26.2km), wet end to wet end
- Installation of hydraulic flying leads
- Pre-installation and connection of electrical flying leads.

After system mobilisation, the subsea stations were deployed by the Toisa Perseus on site in the Agbami field, with a network of 13 NASNet stations. The network was calibrated using a classic box-in method whereby the vessel navigated a circle around the station at a radius of approximately 0.7 x water depth.

Both work class ROVs on the Toisa Perseus (Hercules 3 and 4) were fitted with dual ROV receivers enabling rapid (typically 1 per second) position updates across the entire field in one complete referenced network.

The accurate installation of the suction piles and manifolds was achieved using NASNet MTRx systems which, as well as providing real-time position updates of the items throughout the water column, allowed the Subsea 7 and Nautronix survey teams to monitor pitch and roll via the internally integrated attitude sensors.

In order to monitor system performance, the location of three MTRx stations deployed across the field was regularly checked, especially during structure installations - the performance of the system throughout the operations met all expectations.

Further operational benefits of NASNet were highlighted when the scope of work was altered to accommodate drilling operations in the field. With the NASNet subsea reference network in place and covering the entire field, there was no need to redeploy in an alternative location saving considerable time on the project with minimal disruption.

The offshore phase of the operation onboard the Toisa Perseus was supported by Nautronix personnel throughout, both offshore and back

in base. The Nautronix offshore crew developed an effective working relationship with the Subsea 7 vessel and survey team.

During the operations some issues were observed and many lessons have been learned, which will allow Nautronix to improve the system.

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